

TYPE SPECIMENS OF PACIFIC MOLLUSCA
DESCRIBED MAINLY BY A. GARRETT AND W. PEASE
WITH DESCRIPTION OF A NEW *Morula* SPECIES
(MOLLUSCA:GASTROPODA)

W.O. CERNOHORSKY

AUCKLAND INSTITUTE AND MUSEUM

Abstract. The type specimens of *Engina gibbosa* Garrett, *Latirus granulatus* Pease, *Engina ovata* Pease, *Sistrum squamosum* Pease, *Engina variabilis* Pease, *Engina nodulosa* Pease, and *Gibbula affinis* Garrett, have been examined. Lectotypes have been designated and the species re-assigned to their appropriate families and synonymy. The species *Morula angulata* (Sowerby), *Gibbula affinis* var. *cognata* Pilsbry, and *Clanculus danieli* Crosse, have also been examined and the lectotypes are illustrated and discussed. The species known to date under the homonymous name "*Morula parva* (Pease)" is here described as *M.parvissima* sp.n.

William Harper Pease (1824-1871), a native of Brooklyn, New York, and a surveyor by profession, took up residence in Honolulu, the capital of the Hawaiian Islands in 1849. He rarely ventured outside of Hawaii and depended on other collectors for specimens collected in other parts of the Pacific. One such collector who later became Pease's friend, was Andrew Garrett (1823-1887), a native of Albany, New York and an iron moulder by trade and sailor by choice, who arrived in Honolulu in 1847. Garrett travelled widely throughout the Pacific and collected the flora and fauna of various island groups whenever the opportunity arose. He discovered many new molluscan species which he described in American and British malacological Journals. He also supplied Pease with many species which were later on described by Pease in the *Proceedings of the Zoological Society of London* and the *American Journal of Malacology*.

Pease's molluscan type-specimens can be found in the British Museum (Nat.Hist.), London, the Academy of Natural Sciences, Philadelphia, and the Museum of Comparative Zoology, Harvard University. Type-specimens of molluscan species described by Garrett are housed in the Bernice P. Bishop Museum, Honolulu, and several types are also in the Academy of Natural Sciences, Philadelphia. Garrett also acted as collector for the German shipping firm J.C. Godeffroy & Son, and he despatched numerous lots of shells with many types among them, to the Zoological Museum in Hamburg. These type-specimens were destroyed during bombing raids on Hamburg during the second world war, but some types may also have become lost during a shipwreck after Garrett's departure from Fiji.

Kay (1965) published a report on Pease's molluscan type-specimens housed in the British Museum (Nat.Hist.), London. A biography and bibliography of W.H. Pease together with a catalogue of names proposed by Pease has been published by Kay & Clench (1975). A biography of A. Garrett has been compiled by Thomas (1979) and a catalogue of molluscan species described by Garrett has been published by Clench (1979).

Family BUCCINIDAE

Genus *Cantharus* Röding, 1798

Cantharus Röding, 1798, Mus.Bolten. p.132. Type species by SD (Cossmann, 1901) *Buccinum tranquebaricum* Gmelin, 1791. Recent, Indian Ocean.

Subgenus *Clivipollia* Iredale, 1929

Clivipollia Iredale, 1929, Austral.Zoologist 5(4):347. Type species by M *C.imperita* Iredale, 1929 = *Ricinula pulchra* Reeve, 1846. Recent, Indo-Pacific.

Cantharus (Clivipollia) recurvus (Reeve, 1846) (Figs.1-4)

1846. *Ricinula recurva* Reeve, Conch.Icon. 3:pl.6,fig.53.

1872. *Engina gibbosa* Garrett, Proc.Calif.Acad.Sci. 4:203.

1975. *Cantharus (Clivipollia) recurva* (Reeve), Cernohorsky, Rec. Auckland Inst.Mus. 12:205, figs.67,68 (figd.syntype).

TYPE LOCALITY. Lord Hoods I [= S.Marutea I, S.E.end of the Tuamotu Archipelago] (*recurva*); Viti [Fiji] and Samoa Is (*gibbosa*).

Type specimens. Two syntypes of *R.recurva* Reeve, are in the British Museum (Nat.Hist.), London (for further details see Cernohorsky 1975). Seven syntypes of *E.gibbosa* Garrett from the Samoa Is, are in the Bernice P. Bishop Museum, Honolulu, No.1669, and four syntypes of *E.gibbosa* from the Fiji Is are in the Academy of Natural Sciences, Philadelphia No. 34534. The larger specimen from the Samoan Is, now in the Bernice P.Bishop Museum, Honolulu, length 9.7 mm, width 5.3 mm, height of aperture 5.2 mm, is here selected as the lectotype of *E.gibbosa* Garrett. The lectotype has 6¼ whorls of the teleoconch and a protoconch of 1¼ embryonic whorls, the shell is sculptured with prominent wavy spiral cords, the outer lip has a denticle bordering the anal canal and is followed by 5 denticles, the narrowly calloused columella has 5 denticles at the margin, 1 parietal denticle and a "split tooth" deeper within; the shell is orange-brown and spiral cords whitish (Figs.1,2). The syntype from the Fiji Is measures length 7.7 mm, width 4.5 mm (Figs.3,4).

Engina gibbosa Garrett, 1872, is a synonym of *Cantharus (Clivipollia) recurvus* (Reeve, 1846).

Cantharus (Clivipollia) albocinctus (Pease, 1860)

(Figs. 6,7)

1860 *Engina albocincta* Pease, Proc.Zool.Soc.Lond. p.142; 1965 Kay, Bull.Brit.Mus. (Nat.Hist.),Zool.Suppl. 1:16,pl.2,figs.9,10 (figd. lectotype); 1979 Kay, Hawaiian Mar.shells p.263, fig.92F.

1975. *Cantharus (Clivipollia) albocinctus* (Pease), Cernohorsky, Rec.Auckland Inst.Mus. 12:207,fig.70 (figd. lectotype).

TYPE LOCALITY. Hawaiian Is.



Figs. 1-5. 1-4 *Cantharus (Clivipollia) recurvus* (Reeve). 1,2. Lectotype of *Engina gibbosa* Garrett, Samoa Is; BPBM No.1669, 9.7 mm. 3,4. Paralectotype of *E.gibbosa* Garrett, Fiji Is; ANSP No.34534, 7.7 mm. 5. *Latirus granulatus* Pease, Tuamotu Archipelago; MCZ No.261181, 23.6 mm.

Type specimens. The lectotype of *C. (C.) albocinctus* (Pease), is in the British Museum (Nat.Hist.), London, No.1961454 (for further details see Kay, 1965 and Cernohorsky, 1975).

The species was previously known by illustrations of the faded lectotype or worn and faded specimens. A fresh, live-taken specimen has been collected at Faaone, Tahiti (leg. J.Trondle), length 7.3 mm, width 3.6 mm. The specimen has 5¼ mature whorls and a protoconch of 3 smooth, rose-coloured embryonic whorls; the shell is dark reddish-brown with a white median band and occasional pale spots on cords (Figs.6,7).

Genus **Engina** Gray, 1839

Engina Gray, 1839, Zool.Capt.Beechy's voy."Blossom", p.112. Type species by SD (Gray,1847)
E.zonata Gray, 1839 = *Purpura turbinella* Kiener, 1836. Recent, Caribbean.

Engina ovata Pease, 1865 (Figs.8,9)

1865. *Engina ovata* Pease, Proc.Zool.Soc.Lond. p.513; 1868 Pease, Americ.J.Conch. 3(4):274,pl.23,fig.6.

1883. *Engina funiculata* Reeve (pars), Tryon, Man.Conch. 5:194,pl.62,fig.48 only (non *Ricinula funiculata* Reeve, 1846).

TYPE LOCALITY. Island of the central Pacific (Pease 1865); Howland I (Pease 1868).

Type specimens. The holotype of *Engina ovata* Pease, is in the Academy of Natural Sciences, Philadelphia, No. 34536, *ex*-Pease collection, length 11.5 mm, width 6.3 mm. There are 5½ whorls inclusive of the protoconch, each whorl with a blackish-brown row of nodules at sutures and a pinkish band in between, the body whorl with 9 rows of nodules. The outer lip has a denticle bordering the anal canal, followed by 4 strong denticles, the columella with 8 denticulate lirae. The nodulose spiral cords are black, interspaces pinkish-white and edge of aperture light violet with a brown stain on columella (Figs.8,9).

On the label accompanying the holotype of *Engina ovata* is a note (appended by Tryon ?) = *E.funiculata* Reeve. The types of *Ricinula funiculata* Reeve, 1846 (see Cernohorsky, 1975, fig. 74) although superficially similar in colouring to *Engina ovata*, are worn specimens of a *Morula*, family Muricidae. *Morula funiculata* is different in shape, the columella lacks the denticulate lirae and prominent swelling, and the denticles on the outer lip are smaller and more numerous.

Family FASCIOLARIIDAE

Subfamily PERISTERNIINAE

Genus **Latirus** Montfort, 1810

Latirus Montfort, 1810, Conchyl.Syst. 2:531. Type species by OD *L.aurantiacus* Montfort, 1810
= *Murex gibbulus* Gmelin, 1791. Recent, Indo-Pacific.

Latirus granulosus Pease, 1868

(Fig.5)

1868. *Latirus granulosus* Pease, Americ.J.Conch. 3(4):279,pl.23,fig.10 (fig.18 in error).
 1881. *Peristernia granulosa* (Pease), Tryon, Man.Conch. 3:86,pl.66,fig.105; 1933 Dautzenberg & Bouge, J.Conchyl. 77:202.

TYPE LOCALITY. Paumotus [= Tuamotu Archipelago, French Polynesia].

Type specimens. Four syntypes of *L.granulosus* Pease, are in the Museum of Comparative Zoology, Harvard University, Cambridge No. MCZ-261181, *ex-* Pease collection (Marked "paratypes"). The specimen illustrated by Pease (1868), dimensions length 23.6 mm, width 10.7 mm, is here selected as the lectotype of *L.granulosus* Pease. The lectotype has *c.* 6 whorls, 9 axial ribs on the penultimate and 9 on the body whorl, 9 granulose spiral cords + 2-3 nodes on the penultimate and 24 spiral cords on the body whorl; aperture is violet and lirate within, columella with 3 small folds and a parietal denticle and the colour is orange-brown with the granules a paler colour (Fig.5).

Family MURICIDAE

Subfamily THAIDINAE

Genus **Morula** Schumacher, 1817

Morula Schumacher, 1817, Essai nouv.syst. pp.68,227. Type species by M *M.papillosa* Schumacher, 1817 = *Drupa uva* Röding, 1798. Recent, Indo-Pacific.

Morula marginatra (Blainville, 1832)

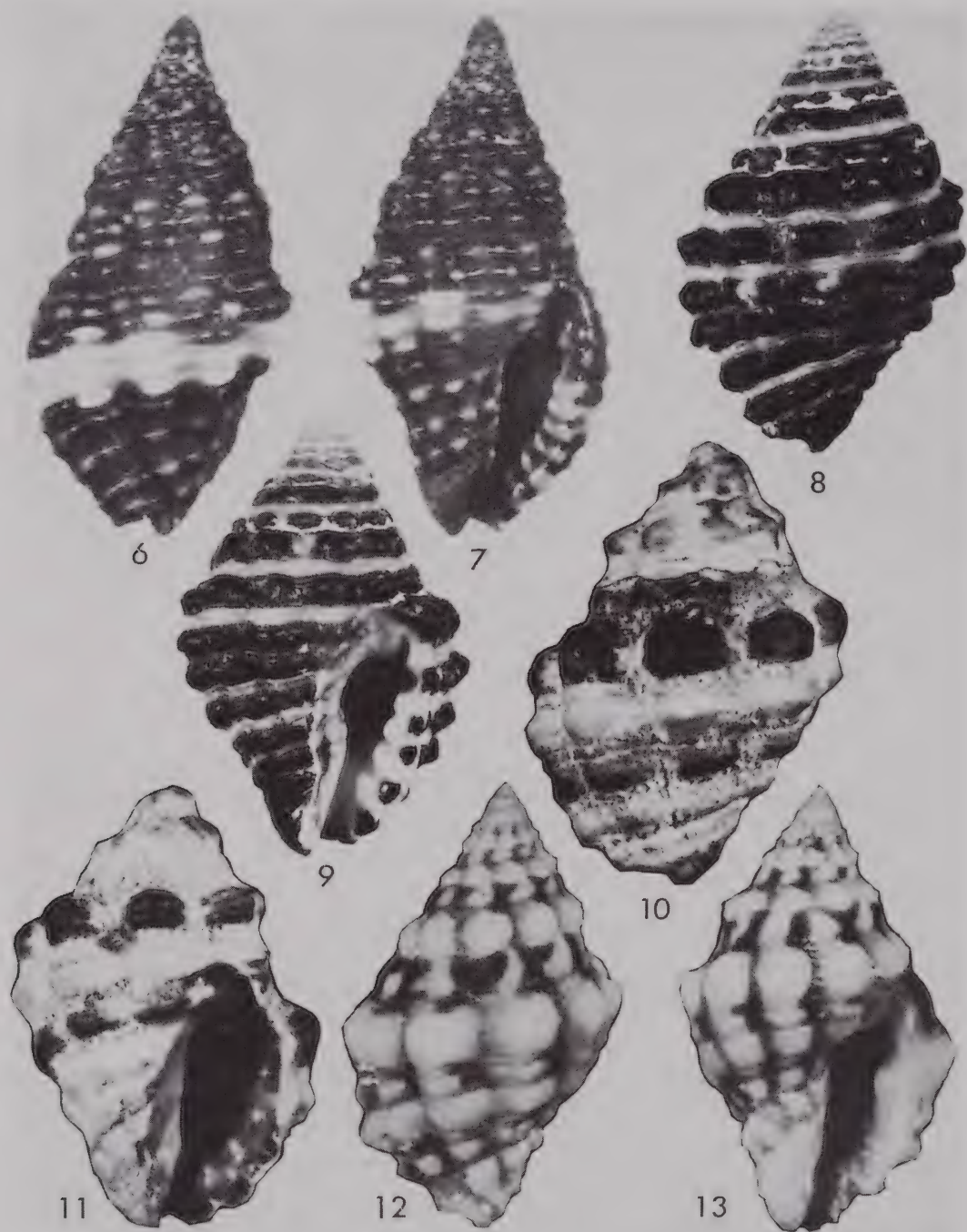
(Figs.10,11)

1832. *Purpura marginatra* Blainville, Nouv. Ann. Mus. Hist. Nat. Paris 1:218, pl.10, fig.1.
 1836. *Purpura cancellata* Kiener, Spéc.gén.icon,coq.viv. 8:25,pl.17,fig.16 (ref. to Blainville, 1832, pl.10,fig.1) [non Quoy & Gaimard, 1833].
 1868. *Sistrum squamosum* Pease, Americ.J.Conch. 3(4):277,pl.23,fig.14.

TYPE LOCALITY. Tycopia, New Hebrides [= Ticopia, Solomon Is] (*marginatra* and *cancellata*); Kingsmill Is [= southern Kiribati Is] (*squamosum*).

Type specimens. Three syntypes of *Sistrum squamosum* Pease, are in the Academy of Natural Sciences, Philadelphia No. 29910, *ex-*Pease coll. The illustrated syntype, which is here designated as the lectotype of *S.squamosum* Pease, measures length 11.5 mm, width 8.0 mm. The shell is dull with a lamellose sculpture, coarse brown and white nodes, a brown aperture, 4 paler denticles on the outer lip and 2 weak folds on the columella (Figs.10,11).

S.squamosum Pease, 1868, is a synonym of *Morula marginatra* (Blainville, 1832). A label accompanying the syntypes of *S.squamosum* reads " = *marginatra* Blainville".



Figs. 6-13. 6,7 *Cantharus (Clivipollia) albocinctus* (Pease). Faaone, Tahiti; 7.3 mm. 8,9. *Engina ovata* Pease. Holotype from Howland I, ANSP No.34536; 11.5 mm. 10,11. *Morula marginatra* (Blainville). Lectotype of *Sistrum squamosum* Pease from Ticopia I, Solomon Is; ANSP No. 29910, 11.5 mm. 12,13. *Morula variabilis* (Pease). Lectotype from Tuamotu Archipelago; MCZ No.260618, 7.0 mm.

Morula variabilis (Pease, 1868)

(Figs.12,13)

1868. *Engina variabilis* Pease, Americ.J.Conch. 3(4):275pl.23, fig.9; 1933 Dautzenberg & Bouge, J.Conchyl. 77:210.

TYPE LOCALITY. Paumotus [= Tuamotu Archipelago, French Polynesia].

Type specimens. Three syntypes of *M.variabilis* (Pease) are in the Museum of Comparative Zoology, Harvard University, Cambridge No. MCZ-260618, *ex*-Pease coll. The syntype measuring length 7.0 mm, width 4.4 mm, is here selected as the lectotype of *M.variabilis* (Pease). The lectotype has 4 mature whorls and a conical protoconch of 4 smooth embryonic whorls. There are 9 nodose axial ribs and 4 spiral rows of nodes on the body whorl and additional intermediate spiral cords; the outer lip is thick with 4 denticles; the aperture is purplish-violet, and the nodes pinkish-white with dark brown interspaces. (Figs.12,13).

Tryon (1883) considers *Engina variabilis* to be a synonym of *E.nodicostata* described by Pease (1868) one page earlier. However, Dautzenberg & Bouge (1933) insist that *Morula variabilis* is a good species and they cite several Polynesian localities where the species has been collected.

Morula parvissima sp. n.

(Figs.14,15)

1868. *Engina parva* Pease, Americ.J.Conch. 3(4):276,pl.23,fig.11; 1883 Tryon, Man.Conch. 5:195,pl.653,fig.55; 1933 Dautzenberg & Bouge, J.Conchyl. 77:209; 1967 Orr-Maes, Proc.Acad.Nat.Sci.Philadelphia 119:135,pl.12,fig.G; 1986 Springsteen & Leobrera, Shells Philippines p.140,pl.38,fig.7 (non *Ricinula parva* Reeve, 1846 = *Morula*).
1978. "*Morula parva*" (Pease), Cernohorsky, Rec.Auckland Inst.Mus. 15:77,figs.24,25 (illustrated paratypes of *M.parvissima*).

Shell up to 6.2 mm in length, solid, elongate-biconic, width 48-56% of shell-length, teleoconch of 3-3¼ whorls, conical protoconch of ¾ + (incomplete in specimens examined) smooth, glassy embryonic whorls. Whorls sculptured with prominent nodules arranged on 9-10 axial ribs on penultimate and 7-9 ribs on body whorl; penultimate whorls with 2 spiral rows and body whorl with 6 spiral rows of nodules, white nodules larger than blackish ones. Under magnification numerous fine, minutely beaded spiral striae can be seen to cover surface. Aperture narrow, outer lip thickened and with 4 denticles, third anterior denticle always the smallest, columella narrowly calloused and with 1-2 minute denticles anteriorly, anal and siphonal canals distinct. Ornamented with alternating rows of white to pinkish-white and blackish-brown nodules, calloused siphonal fasciole with oblique brown streaks, edge of outer lip with 3 blackish spots, base of columella stained brown, blackish-brown colouring of nodules usually extending on to parietal wall.

TYPE LOCALITY. Mururoa Atoll, Tuamotu Archipelago.

DISTRIBUTION. From the Tuamotu Archipelago to the Philippines and the Cocos-Keeling Is, Indian Ocean.

Holotype. In the Auckland Institute and Museum No. TM-1374, length 5.6 mm, width 2.9 mm (Figs. 14, 15).

Paratypes. Several paratypes from the type locality and Faaone, Tahiti, Society Is, in coll. C. Beslu, Tahiti, and J. Trondle, La Force, France. Paratypes have also been illustrated by Cernohorsky (1978, figs. 24, 25).

It has already been pointed out (Cernohorsky 1978) that "*Engina parva*" Pease, 1868, is a secondary homonym of *Ricinula parva* Reeve, 1846, and that the species certainly does not belong to the genus *Engina* Gray, family Buccinidae, but to *Morula* Schumacher, family Muricidae. Four syntypes of *Engina parva* Pease, are in the Academy of Natural Sciences, Philadelphia No. 34542, *ex*-Pease coll. All four syntypes are greatly worn and faded and almost useless for identification purposes. To complicate matters, Pease (1868) described his *Engina parva* as "nodules on upper part of last whorl produced into spines, whole surface scabrous or wrinkled". There is no evidence whatsoever of either spines or scabrous surface in either the greatly worn syntypes or Pease's original type-figure which looks in considerably better condition than any of the existing syntypes (Figs. 16-18). The only features associating the worn syntypes with fresh specimens of *parvissima* are the alternate rows of blackish-brown and white nodules and the 4 denticles on the outer lip, the third anterior denticle being the smallest.

It is for this reason that *M. parvissima* has been described as a new species with a clearly recognizable holotype and paratypes rather than being proposed as a substitute name for *Engina parva* Pease with its worn type specimens and conflicting description.

***Morula angulata* (Sowerby, 1893)**

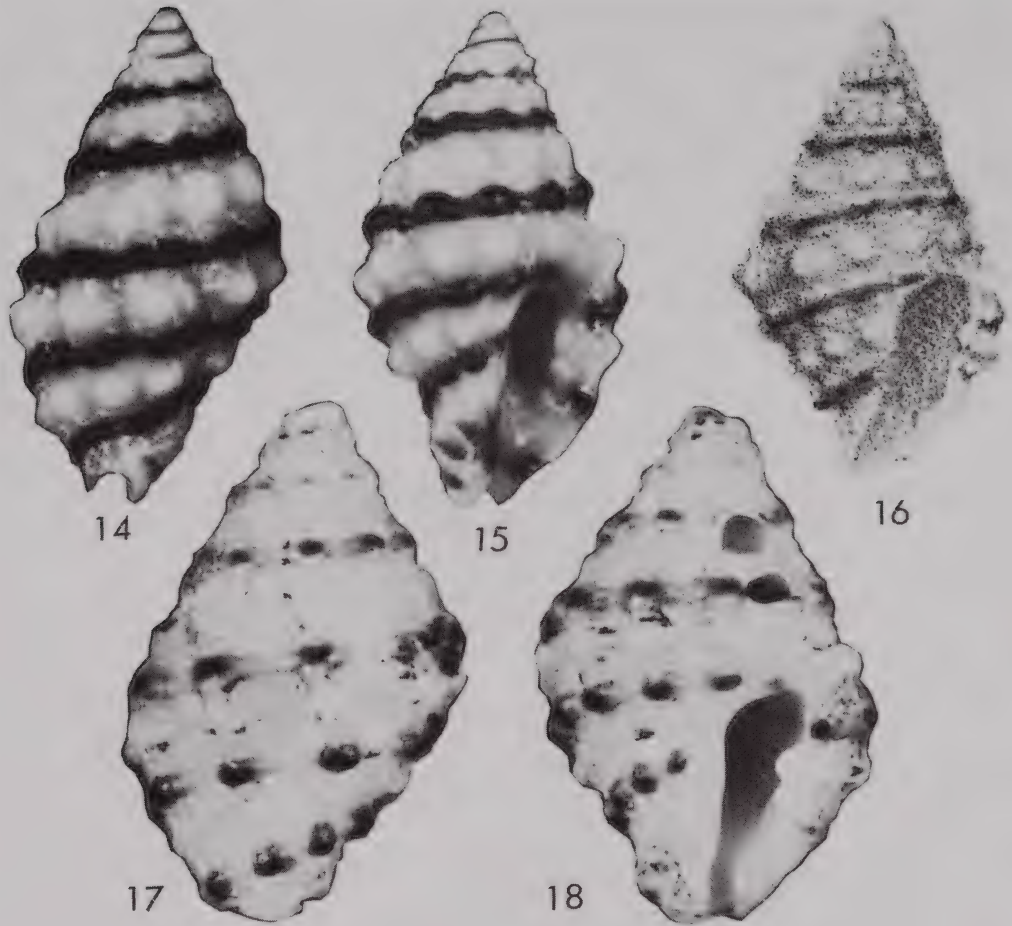
(Figs. 19-21)

1893. *Sistrum angulatum* Sowerby, Proc. Malac. Soc. Lond. 1:46, pl. 4, fig. 3.

TYPE LOCALITY. Mauritius.

Type specimens. The holotype of *Sistrum angulatum* Sowerby, is in the British Museum (Nat. Hist.), London, No. 1902.11.26.72., length 6.4 mm, width 4.7 mm. The holotype is worn and faded, has 5 remaining whorls, 2 spiral rows of nodules on upper spire whorls and 8 on the body whorl, 4 denticles on the outer lip and 3 small denticles on the anterior of the columella; brown colouring is visible on some echinate nodes (Fig. 19).

The species is sympatric with *M. parvissima* at Mururoa Atoll, Tuamotus (*leg.* C. Beslu). Fresh specimens are biconic, the teleoconch consists of 3 whorls and the conical protoconch of 3½ glassy, smooth embryonic whorls; the shell is sculptured with alternating rows of orange-yellow and dark purple or purple-brown nodules, the latter being more echinate than the former. The surface is distinctly scabrous, and under magnification axial foliations and numerous spiral striae are visible; the outer lip has 4 denticles and the anterior of the columella 1-2 denticles. The size range is 5.5 — 6.0 mm (Figs. 20, 21).



Figs. 14-18. 14,15. *Morula parvissima* sp.n. Mururoa Atoll, Tuamotu Archipelago. Holotype AIM No.TM-1374, 5.6 mm. 16-18. "*Engina*" *parva* Pease. 16. Type-figure (from Pease, 1868, pl.23,fig.11). 17,18. Syntype from Tuamotus, ANSP No.34542, 5.7 mm.

Genus **Cronia** H. & A. Adams, 1853

Cronia H. & A. Adams, 1853, Gen.Rec.Moll. 1:128. Type species by M *Purpura amygdala* Kiener, 1835. Recent, Indo-Pacific.

Subgenus **Ergalatax** Iredale, 1931

Ergalatax Iredale, 1931, Rec.Austral.Mus. 18(4):231,233. Type species by OD *E.recurrens* Iredale, 1931 = *Buccinum contractum* Reeve, 1846. Recent, Indo-Pacific.

Cronia (Ergalatax) nodulosa (Pease, 1869) (Figs.22,23)

1869. *Engina nodulosa* Pease, Americ.J.Conch. 5(2):71,pl.8,fig.11; 1883 Tryon, Man.Conch. 5:189,pl.69,fig.10.

TYPE LOCALITY. Ebon I, Marshall Is.

Type specimens. The holotype of *Engina nodulosa* Pease, is in the Academy of Natural Sciences, Philadelphia, No.34513, *ex*-Pease coll. The holotype measures length 16.2 mm, width 8.0 mm, and has 5 whorls and a worn protoconch. There are 8 axial ribs and 2 main spiral cords on the penultimate and 8 axial ribs and 5 main spiral cords on the body whorl, the area between main spiral cords is sculptured with finer spiral threads, and there are 6 denticles on the outer lip and a smooth columella. The shell is brown in colour with a white median band (Figs.22,23).

Pease (1869) described the species as "blackish, last whorl encircled by a whitish band", but the holotype has obviously faded to brown. The species has not been reported in recent malacological literature.

Family TROCHIDAE

Genus **Gibbula** Risso, 1826

Gibbula Risso, 1826, Hist.Nat.l'europ.merid. 4:134. Type species by SD (Herrmannsen, 1847) *Trochus magus* Linnaeus, 1758. Recent, Mediterranean.

Subgenus **Eurytrochus** Fischer in Kiener, 1879

Eurytrochus Fischer in Kiener, 1879, Spéc.gén.icon.coq.viv. 11:417. Type species by SD (Pilsbry, 1889) *Clanculus danieli* Crosse, 1862. Recent, West Pacific.

Gibbula (Eurytrochus) affinis Garrett, 1872 (Figs.24-29)

1872. *Gibbula affinis* Garrett, Proc.Calif.Acad.Sci. 4:201; 1889 Pilsbry, Man.Conch. 11:230,pl.40,fig.6,7.

1903. *Gibbula affinis* var. *cognata* Pilsbry, Nautilus 17(6):69.

1964. *Eurytrochus affinis cognatus* (Pilsbry), Habe, Shells west. Pacific col. 2:11,pl.4,fig.17.

TYPE LOCALITY. Viti [= Fiji] and Samoa Is (*affinis*); Riukiu I [= Ryukyu Is, Japan] (*cognatus*).

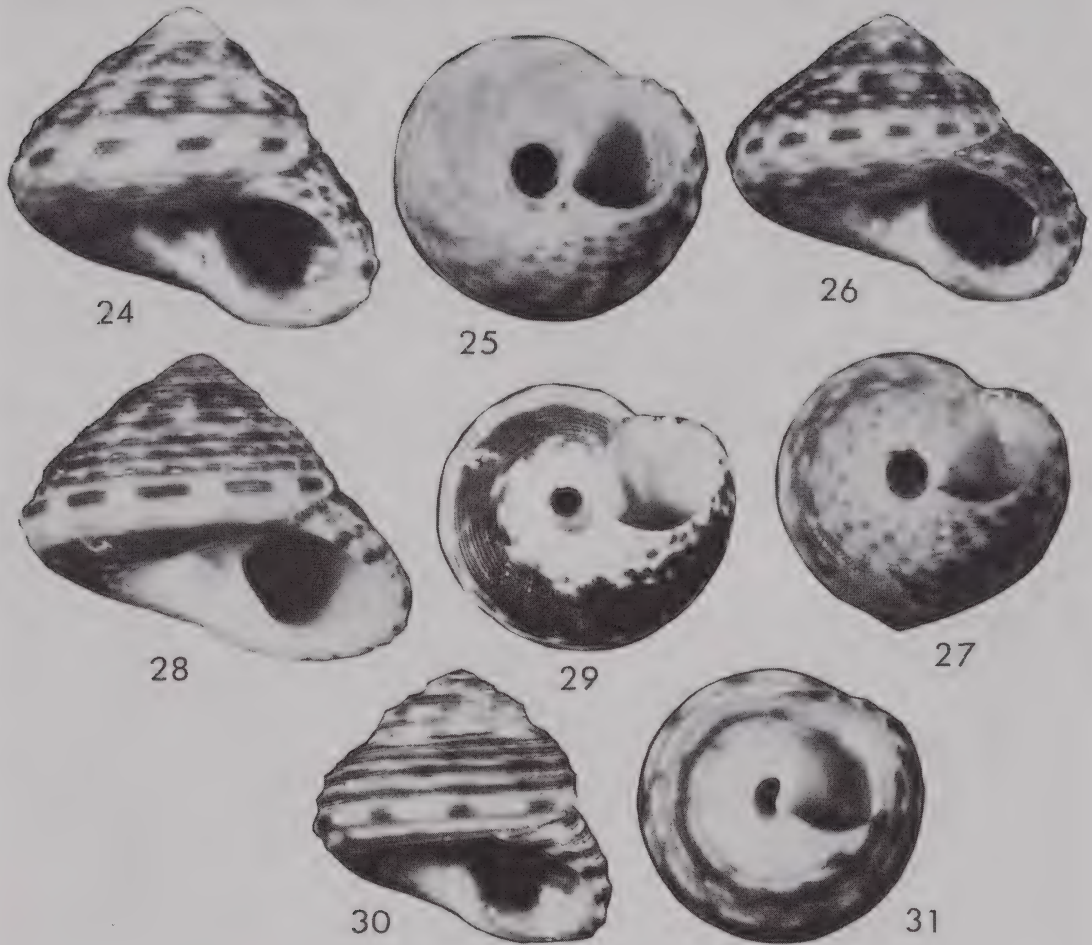
Type specimens. Four syntypes of *Gibbula affinis* Garrett, are in the Academy of Natural Sciences, Philadelphia, No.48679. The syntype measuring width 6.3 mm, height 5.5 mm, is here selected as the lectotype (Figs.24,25). The species has *c.* 5½-6 whorls inclusive of protoconch, 5-6 minutely beaded spiral cords on the penultimate whorl and some very fine intermediate striae, the interspaces between spiral cords with extremely fine, oblique striae. There is a roundly angulate periphery with a stronger cord and base with *c.* 9 cords which flatten out towards the umbilicus which has a



Figs. 19-23. 19-21. *Morula angulata* (Sowerby). 19. Holotype from Mauritius, B.M.(N.H.) No.1902.11.26.72., 6.4 mm. 20,21. Specimen from M ururoa Atoll, Tuamotu Archipelago; 5.9 mm. 22,23. *Cronia (Ergalatax) nodulosa* (Pease). Ebon I, Marshall Is; Holotype ANSP No.34513, 16.2 mm.

strong cord entering the interior. The colouring consists of dark greenish-brown maculations on a cream-coloured background. Other syntypes are in the Bernice P. Bishop Museum, Honolulu, No.2273, and the illustrated syntype, width 6.6 mm, height 5.6 mm, is complete with operculum, which is circular, corneous, multispiral with a central nucleus (Figs.26,27).

Four syntypes of *G.affinis* var. *cognata* Pilsbry, are also in the Academy of Natural Sciences, Philadelphia, No.82038. This Ryukyu form differs from typical



Figs. 24-31. 24-29. *Gibbula (Eurytrochus) affinis* Garrett. 24,25. Lectotype from the Fiji Is, ANSP No.48679; 6.3 mm. 26,27. Paralectotype from the Samoa Is, BPBM No.2273; 6.6 mm. 28,29. Lectotype of *G. (E.) affinis* var. *cognata* Pilsbry, Ryukyu Is, ANSP No.82038; 6.8 mm. 30,31. Lectotype of *G. (E.) danieli* (Crosse), New Caledonia, MNHNP (no number); 6.3 mm.

affinis in the wider-spaced spiral cords. The illustrated syntype, width 6.8 mm, height 4.8 mm, is here selected as the lectotype of *G. affinis* var. *cognata* Pilsbry (Figs.28,29).

Three syntypes of *Clanculus danieli* Crosse, 1862, from New Caledonia, the type-species of the subgenus *Eurytrochus* Fisher in Kiener, are in the Muséum National d'Histoire Naturelle, Paris (no number). The syntype measuring width 6.3 mm, height 5.8 mm, is here selected as the lectotype of *Clanculus danieli* Crosse. The lectotype has 3 whorls, a protoconch of 2 embryonic whorls and a sculpture consisting of spiral cords and intermediate macrosculpture; aperture nacreous (Figs.30,31).

Acknowledgements. I would like to express my thanks to Dr R. Robertson, Academy of Natural Sciences, Philadelphia, and Dr K. Boss, Museum of Comparative Zoology, Harvard University, Cambridge, for the loan of type material from their collections. I am grateful to Mr J. Trondle, La Force, France, and Mr C. Beslu, Papeete, Tahiti, for material collected in the Tuamotu and Society Islands.

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